

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
20 January 2005 (20.01.2005)

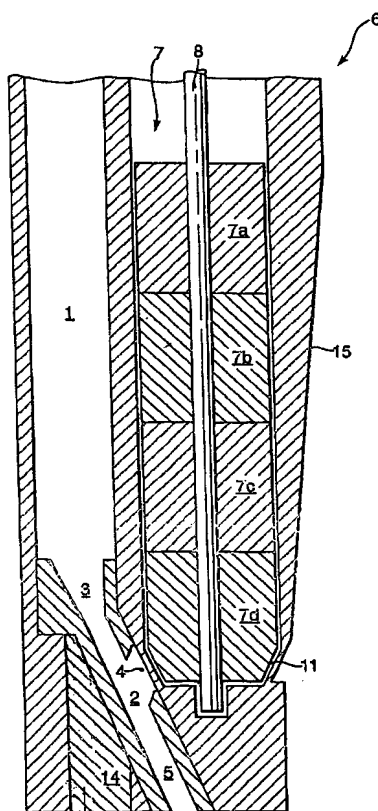
PCT

(10) International Publication Number
WO 2005/005766 A1

- (51) International Patent Classification⁷: E21B 7/18, B65G 54/02, B03C 1/12, E21B 21/00
- (21) International Application Number: PCT/EP2004/051407
- (22) International Filing Date: 8 July 2004 (08.07.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
03077159.6 9 July 2003 (09.07.2003) EP
04101507.4 14 April 2004 (14.04.2004) EP
- (71) Applicant (for all designated States except CA, US): SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V. [NL/NL]; Carel van Bylandtlaan 30, NL-2596 HR The Hague (NL).
- (72) Inventor; and
(75) Inventor/Applicant (for US only): BLANGÉ, Jan-Jette [NL/NL]; Kesslerpark 1, NL-2288 GS Rijswijk (NL).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: DEVICE FOR TRANSPORTING PARTICLES OF A MAGNETIC MATERIAL AND TOOL COMPRISING SUCH A DEVICE



(57) Abstract: A device for transporting particles containing a magnetic material in a selected direction, comprising: a magnet (7) arranged to generate a magnetic field for retaining the particles on a support surface (15) whereby the magnetic field on the support surface comprises a high-field band, a low-field band, and a magnetic field gradient between said high- and low-field bands; means for advancing the high- and low-field bands relative to the support surface (15) in a direction having a component in the direction of said magnetic field gradient, whereby the high-field band is followed by the low-field band; whereby along said high-field band at least a first magnetic pole and a second magnetic pole of opposite polarity are arranged such that a first magnetic path on the support surface from the first magnetic pole to the second magnetic pole is shorter than a second magnetic path on the support surface crossing the gradient zone from the first magnetic pole to any other nearest magnetic pole of opposite polarity.



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.